36.   (Amended) The receiver according to claim 31, wherein said receiver receives a control command from said predetermined distribution unit to cause a video tape recorder connected to said receiver to record said specified distributable program.

REMARKS

Applicants respectfully request consideration and allowance of claims 1-36 which are pending in the above-identified application.

Applicants have amended claims 1-36 to more clearly recite the invention. No new matter has been added by the claim amendments.

Applicants have amended the specification (including the Abstract) to correct for typographical and grammatical errors and to place the application in better form for U.S. practice. No new matter has been added by the amendments to the specification.

In light of the above, Applicants submit that the instant claims are in condition for allowance. Early and favorable action is earnestly solicited.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Respectfully submitted,

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PROGRAM DISTRIBUTION SYSTEM, METHOD OF PROGRAM DISTRIBUTION, TRANSMITTER AND RECEIVER

FIELD OF THE INVENTION

[0001]   The present invention relates to a program distribution system, a method of program distribution, a transmitter and a receiver, and is applicable to a video on demand (VOD) service in satellite broadcasting for example.

DESCRIPTION OF THE RELATED ART

[0002]   ~~Hereinafter, i~~In ~~a~~ satellite broadcasting or ~~a~~ cable television, a service called pay per view (hereinafter, this is referred to as PPV) has been provided in which a user pays a viewing fee for viewing each of his desired pay programs (this is referred to as "buy a program") ~~and viewing the above pay program has been provided~~.

[0003]   When executing the above PPV service, the user first operates a receiver called an integrated receiver decoder (IRD) so that an electric program guide called an EPG is displayed on a monitor screen that is connected to the above IRD~~, and specifies to buy a program wanting to view on the above EPG~~. The user then specifies on the EPG the desired program he wants to buy and view on the EPG.   The IRD transmits the program ID of the program that was specified by the user to buy to a distributor via a public telephone circuit or a cable television circuit as purchase information. Each program to be provided by the PPV has been enciphered respectively, and the distributor transmits cryptanalytic information called a "key" that deciphers the program bought by the user according to the purchase information to the IRD of the user who bought the program. Then, the IRD deciphers the program bought by the user with the above cryptanalytic information, and ~~displaying~~ displays the deciphered program.

[0004]   Furthermore, in ~~the~~ satellite broadcasting or ~~the~~ cable television, ~~it has been considered that the~~ there is a service called video on demand (hereinafter, this is referred to as VOD) in which a user transmits the distribution request (request) of a desired program to the distributor when he wants ~~to do~~, and the ~~above~~ distributor ~~distributes~~ responds to the request by distributing the program to the user ~~who~~

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~~transmitted the above distribution request responding to this~~. By using the ~~above~~ VOD service, the user can view his desired program when he wants ~~as if he operates~~ similar to operating a video tape recorder (VTR) ~~being near at hand~~.

[0005]   In the above PPV service, it is necessary that the user previously buy the program before the program is broadcasted. Therefore, there is a problem that the user must remember the channel of his bought program and its air time, and if he forgets this, he ~~fails~~ is unable to view or record the ~~above~~ program.

[0006]   Moreover, in ~~this~~ the VOD service, there is a problem that when the user records his bought program ~~by the~~ with a VTR, he must operate the VTR in synchronization with the start of the distribution of the ~~above~~ bought program, ~~so that the~~ making the recording operation ~~is~~ troublesome.

SUMMARY OF THE INVENTION

[0007]   In view of the foregoing, an object of this invention is to provide a program distribution system, a method of program distribution, a transmitter and a receiver ~~enabling~~ that enable the user ~~to~~ easily buy a program, and ~~having~~ that have improved operability.

[0008]   The foregoing objects and other objects of the invention have been achieved by the provision of a ~~distributing~~ distributable program storing ~~means~~ unit for storing plural ~~distributing~~ distributable programs, and a distribution ~~control means~~ controller for receiving from a specified receiver a distribution request to ~~request the distribution of~~ distribute a ~~distributing~~ distributable program. ~~.~~ The distribution request is formed in a free ~~-~~ style format text described in the arbitrary style of the user of the specified ~~receiving means~~ receiver. ~~from the receiving means, for collating~~ The controller compares a word described in the distribution request with each title of the ~~distributing~~ distributable programs stored in the ~~distributing program~~ storing ~~means~~ unit, and if the title corresponding to the word described in the ~~distributing~~ distribution request is found, ~~for reading~~ the controller reads out the ~~distributing~~ distributable program having the ~~above~~ specified title from the ~~distributing program~~ storing ~~means~~ unit. ~~, distribution~~

~~means~~The invention further provides a distributor for distributing the read-out ~~distributing~~ distributable program to the receiver, and the ~~receiving means~~receiver for receiving the distributed program. Thus, a program distribution system by which a user can easily buy a program can be obtained.

[0009]   Moreover, if the title corresponding to the word described in the distribution request is found, the distribution ~~control means~~controller transmits a notice of correspondence to the receiver showing that the ~~above~~ corresponding title was found ~~to the receiving means~~, and at the same time, it transmits a control command attached to the notice of correspondence to record the distributed program by controlling a video tape recorder that is connected to the ~~receiving means~~receiver. ~~by attaching to the notice of correspondence.~~

[0010]   The distribution request is compared with each title of the ~~distributing~~ distributable programs, and if a title corresponding to the word described in the distribution request is found, the ~~distributing~~ distributable program having ~~the above~~that title is distributed. Therefore, the user can enter the distribution request in his arbitrary style; he can easily perform a distribution request.

[0011]   Furthermore, since the video tape recorder control command will be transmitted by attaching it to the notice of correspondence, it is ~~unnecessary~~not necessary that the user separately operates the video tape recorder; ~~the~~ therefore, operability in program recording ~~can be~~is improved.

[0012]   The nature, principle and utility of the invention will become more apparent from the following detailed description when read in conjunction with the accompanying drawings in which like parts are designated by like reference numerals or characters.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]   In the accompanying drawings:

[0014]   Fig. 1 is a block diagram showing the configuration of a digital broadcasting system of an embodiment of the present invention;

[0015]   Fig. 2 is a block diagram showing the configuration of an IRD;

[0016]   Fig. 3 is a flowchart showing program distribution processing;

[0017]   Fig. 4 is a diagram showing an example of an entry in a request mail; and

[0018]   Fig. 5 is a diagram illustrating an example of an entry in an answer mail.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019]   Preferred embodiments of the present invention will be described with reference to the accompanying drawings.÷

[0020]Configuration of Digital Satellite Broadcasting System

[0021][0020]   Referring to Fig. 1, 1 generally shows a digital satellite broadcasting system. On a sending end, a transmitter 10 compressively codes video and audio signals on plural channels supplied from external equipment by each corresponding encoder 11A to 11N according to an a moving picture experts group (MPEG)-2 system, and transmits the coded signals to a multiplexer 13 as bit streams S11A to S11N.

[0021]   On the other hand, a VOD controller 15 acting as a distribution control meanscontroller controls a video server 12 acting as distributing a distributable program storing means unit according to a distribution request in a video on demand (hereinafter, it is referred to as VOD) service, transmitted from an IRD 30, to encipher a program described in the above distribution request, and transmitting to transmit the enciphered program to the multiplexer 13 as a VOD bit stream S12.

[0024][0022]   The multiplexer 13 acting as distribution meansa distributor divides the bit streams S11A to S11N and the VOD bit stream S12 into packets in of 188 byte length called transport stream (TS) packets, and then performs time division multiplexing on them the bit streams S11A to S11N and VOD bit stream S12 for each packet and generatingto generate a transport stream S13.   and supplies thisThe transport stream S13 is supplied to a modulator 14 acting as distribution meansa distributor. The modulator 14 modulates the transport stream S13 and transmits the modulated data to a broadcast satellite 20 as a broadcast wave S10 via a transmitting antenna 16. The broadcast satellite 20 receives the broadcast wave S10 with a transponder (not shown), and then amplifies

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thisit, and transmits the amplified wave to the earth as a
broadcast wave S20.

[0025][0023]   On a receiving end, the an integrated receiver
decoder (IRD) 30 acting as receiving meansa receiver receives
the broadcast wave S20 via a receiving antenna 25. , andThe
IRD decodes video and sound on a channel that is selected by a
user's operation of a remote commander 60 from among the video
and audio signals on the plurala plurality of channels
multiplexed on the above broadcast wave S20.   The IRD 30
transmits thus the generated video signal S34 and audio signal
S35 to the display 85 and the speaker (not shown) of a monitor
80 to for output as video and sound.

[0026][0024]   A video tape recorder (VTR) 90 is connected to
the IRD 30.   The IRD 30 controls the above VTR 90 according to
the user's operation, and outputs the video signal S34 and the
audio signal S35 to the above VTR 90.

[0027][0025]   Furthermore, a keyboard 70 is connected to the
IRD 30; the above IRD 30 can transmit a text entered on the
keyboard 70 by the user to an internet 100 as an e-mail via a
telephone line 95 and an internet service provider (ISP) 110,
and can perform transmit a distribution request in the VOD
service to the transmitter 10 using the above e-mail.

[0028] (2) Configuration of IRD 30

[0029][0026]   Fig. 2 generally shows the IRD 30.   The
broadcast wave S20 received via the receiving antenna 25 is
demodulated in a front end part 31, and a bit stream S31 is
generated.   This bit stream S31 is transmitted to a
demultiplexer 32.

[0030][0027]   The demultiplexer 32 separates the packets on
the channel selected by the user from the bit stream S31.
That is, if the user selects his desiring desired channel by
operating the remote commander 60 (Fig. 1), the above remote
commander 60 superimposes a channel select command entered by
the user's operation on an infrared light S60, and transmits
this to the IRD 30.

[0031][0028]   A light receiving part 43 provided in the IRD
30 receives and demodulates the infrared light S60, and
obtaining obtains the channel select command as an operational
signal S43, and transmits this signal S43 to an IRD controller

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40. The IRD controller 40 supplies a control signal S40 that is a command to select the channel selected by the user to the demultiplexer 32 via a bus 36, based on the operational signal S43. The demultiplexer 32 operates ~~responding~~ in response to the control signal S40 to separate the TS packets on the channel selected by the user from the transport stream S31, and supplies ~~this~~ the separated products to an audio visual (AV) decoder 33 as a bit stream S32.

~~[0032]~~[0029] The AV decoder 33 decodes the bit stream S32 by the MPEG-2 system, ~~and~~ generating video data S33V and audio data S33A, and outputs ~~each of them~~the video data S33V to ~~an~~ a National Television System Committee (NTSC) encoder 34 and the audio data S33A to a digital/analog (D/A) converter 35. The NTSC encoder 34 converts the video data S33V into an analog video signal in the NTSC system and ~~outputting this~~outputs it as a video signal S34 ~~and displaying~~to be displayed on the monitor (Fig. 1). The D/A converter 35 performs analog conversion on the audio data S33A, and outputs ~~this~~ it to the monitor 80 as an audio signal S35.

~~[0033]~~[0030] Also the keyboard 70 (Fig. 1) is connected to the IRD controller 40. The above keyboard 70 supplies ~~the operation on the keyboard by the user~~its output to the IRD controller 40 as a keyboard input signal S70.

~~[0034] (3) Program Distribution Processing by E-mail~~

~~[0035]~~[0031] The digital satellite broadcasting system 1 executes program distribution processing ~~shown in Fig. 3~~ to perform the VOD service, as shown in Fig. 3.

~~[0036]~~[0032] Specifically, the digital satellite broadcasting system 1 (Fig. 1) starts the processing ~~in~~ at RT1. In step SP1, the IRD controller 40 of the IRD 30 (Fig. 2) converts a ~~distribution~~ request ~~to request the~~for distribution on the VOD into an e-mail or "Ereq" according to the entry of the ~~above~~ distribution request by the user's keyboard operation~~., and~~ The IRD transmits ~~this~~ the Ereq to the transmitter 10 as a distribution request ~~mail Ereq~~via a modem 45, the telephone line 95 (Fig. 1), the ISP 110 and the internet 100.

~~[0037]~~[0033] Fig. 4 shows an example of an entry in ~~the distribution request mail~~an Ereq. In the field of sending

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e-mail address "To", the e-mail address of the VOD controller 15 of the transmitter 10 "vodrequest@operator.co.jp" is entered by the IRD controller 40. In the field of sender's e-mail "From", the e-mail address of the IRD 30 (Fig. 1) "user1@operator.co.jp" is entered. ~~And aA~~ predetermined subject "VODreq" showing that the e-mail is a VOD distribution request mail ~~"VODreq"~~ is entered in the field of e-mail subject "Subj".

~~[0038]~~ [0034]   The user enters the distribution request showing the title of a program that he wants ~~its distribution is described~~ in the text field of ~~an~~ the e-mail (labeled "Text") ~~on the~~ using keyboard 70 (Fig. 1). The entry in the above distribution request is similar in operation to the entry in a normal e-mail. Besides, a distribution request has no specific rule of entry, and the user may enter the title of the program in a free style format (free text). Therefore, the user can easily fill up the distribution request. Moreover, it is unnecessary that when the user enters the distribution request statement, the user previously confirms whether or not the requested program ~~wanting its distribution~~ has been provided in the VOD service. The ~~; the~~ user can easily fill ~~up~~ in the distribution request.

~~[0039]~~ [0035]   In step SP2, the VOD controller 15 provided in the transmitter 10 receives the distribution request mail Ereq via the internet 100. In the following step SP3, the VOD controller 15 compares each word ~~in the text (distribution request)~~ in the text field of the distribution request mail Ereq with each title of the ~~plural~~ plurality of VOD programs stored in the video server 12 provided in the transmitter 10, and determines whether or not a program corresponding to the distribution request can be found.

~~[0040]~~ [0036]   If a negative result is obtained in step SP3, ~~this means that any~~ no program corresponding to the distribution request statement ~~does not exist~~ exists. The VOD controller 15 proceeds to step SP4. Then, in step SP4, the VOD controller 15 transmits to the IRD 30 an answer mail or Eans of "no-program found" showing that ~~any~~ no program corresponding to the distribution request has ~~not~~ been

provided in the VOD service. The ~~to the IRD 30, and finishing the~~ processing is finished in step SP5.

~~[0041]~~ [0037]   On the other hand, if an affirmative result is obtained in step SP3, ~~this means that there is~~ a program corresponding to the distribution request exists.   The VOD controller 15 proceeds to step SP6.   Then, in step SP6, the VOD controller 15 transmits to the IRD 30the answer mail Eans of "program found" showing that there is a program corresponding to the distribution request ~~to the IRD 30~~.

~~[0042]~~ [0038]   Fig. 5 shows an example of a description on the answer mail Eans in the case of "program found".   In the field of sending e-mail address "To", "user1@operator.co.jp" showing the e-mail address of the IRD 30 (Fig. 1) is entered by the VOD controller 15.   In the field of sender's e-mail "From", ~~"vodserver@operator.co.jp"~~"vodrequest@operator.co.jp" showing the e-mail address of the VOD controller 15 (Fig. 1) is entered.   ~~And a~~A predetermined subject "VODans" showing that the mail is an answer mail ~~in the VOD "VODans"~~ is entered in the field of e-mail subject "Subj".   In the text field of the e-mail (labeled "Text"), the VOD controller 15 enters the composition "program found" showing that the program corresponding to the distribution request ~~is~~ has been found, the title of the program, its time, its price, the composition "Do you buy this program?", and an OK button B1 and a cancel button B2 programmed by the hypertext markup language (HTML) ~~are entered by the VOD controller 15~~.   Moreover, accounting information on the program "Inf", cryptanalytic information "Key" and a control command "Cmd" to make the VTR 90 that is connected to the IRD 30 start recording in synchronization with the start of broadcasting the program are attached to the answer mail Eans.

~~[0043]~~ [0039]   In step SP7, the IRD controller 40 of the IRD 30 receives the answer mail Eans, controls the NTSC decoder 34 according to ~~this~~the answer mail Eans, and outputs and displays the content of the ~~above~~ answer mail Eans on the monitor 80 (Fig. 1) as the video signal S34.   ~~, and at~~At the same time, ~~it~~ the IRD 30 stores the accounting information Inf, cryptanalytic information Key and control command Cmd

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attached to the answer mail Eans in a random access memory (RAM) 47.

[0044] [0040]   The user reads the answer mail Eans displayed on the monitor 80 and determines whether to buy the program or not.   And theThe user specifies the OK button B1 (if he wants to buy the program) or the cancel button B2 (if he does not want to buy the program) by operating the remote commander 60 or the keyboard 70.

[0045] [0041]   In step SP8, the IRD controller 40 of the IRD 30 determines whether the user buys wants to buy the program or not according to the specification by the user of the OK button B1 or the cancel button B2.   If a negative result is obtained in step SP8, this means that the user has specified the cancel button B2 and cancelled the purchase of the program.   , theThe IRD controller 40 proceeds to step SP9 to transmit to the transmitter 10 a cancel mail or "Ecan" showing the cancel cancellation of the purchase of the program to the transmitter 10, and finishes the processing in step SP10.

[0046] [0042]   On the other hand, if an affirmative result is obtained in step SP8, this means that the user has specified the OK button B1 and agreed to the purchase of the program.   , theThe IRD controller 40 proceeds to step SP11 to transmit to the transmitter 10 a purchase agreement mail or "Econf" showing the agreement to the purchase of the program to the transmitter 10.

[0047] [0043]   In step SP12, the VOD controller 15 of the transmitter 10 transmits the program described in the answer mail Eans to the multiplexer 13 as the bit stream S12 by controlling the video server 12 according to the purchase agreement mail Econf, and multiplexes the above bit stream S12 on the broadcast wave S10, and transmittingtransmits it.

[0048] [0044]   In step SP13, the IRD controller 40 of the IRD 30 reads out the cryptanalytic information Key from the RAM 47, and supplies the above cryptanalytic information Key and the control signal S40 showing the command to select the VOD channel to the demultiplexer 32 via the bus 36.   The demultiplexer 32 operates responding in response to the control signal S40, and separates the TS packets on the VOD channel from the transport stream S31, and at the same time,

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deciphers the ~~above~~ TS packets by means of the cryptanalytic
information Key and displays the result on the monitor 80
(Fig. 1).

~~[0049]~~ [0045]   Moreover, the IRD controller 40 reads out the
control command Cmd from the RAM 47, and supplies this to the
VTR 90 (Fig. 1) via the interface 44 in synchronization with
the start of broadcasting the program on the VOD channel. The
VTR 90 operates ~~responding~~ in response to the control command
Cmd to record the video signal S34 and the audio signal S35.

~~[0050]~~ [0046]   The digital satellite broadcasting system 1
performs program distribution in the VOD service in this
manner, and finishes the processing in step SP14.

~~[0051] (4) Operation and Effects~~

~~[0052]~~ [0047]   According to the above configuration, the user
enters the ~~distribution~~ request ~~to request~~ for the VOD
distribution of an arbitrary program in a free style format on
the keyboard 70. The IRD 30 converts the ~~above~~ distribution
request into an e-mail and ~~transmitting~~ transmits this to the
transmitter 10 as the distribution request mail Ereq.

~~[0053]~~ [0048]   The VOD controller 15 of the transmitter 10
compares each word in the distribution request with each title
of the ~~plural~~ plurality of VOD programs stored in the video
server 12 provided in the transmitter 10 to determine whether
a program corresponding to the distribution request ~~is~~ can be
found or not.   If the program corresponding to the
distribution request ~~is~~ can not be found, the VOD controller
15 transmits the answer mail Enas of "no-program found" to the
IRD 30. On the other hand, if the program corresponding to
the distribution request is found, the VOD controller 15
transmits the answer mail Eans of "program found" to the IRD
30.   At this time, the VOD controller 15 attaches the
cryptanalytic information Key of the program and the VTR 90
control command Cmd to the answer mail Eans.

~~[0054]~~ [0049]   If ~~receiving~~ it receives the answer mail Eans
of "program found", the IRD 30 displays this on the monitor
80. The user watches the above display and determines whether
or not to buy ~~or not~~ the program, and enters ~~the above~~
~~determined result~~ his decision to the IRD 30 using the remote
commander 60 or the keyboard 70. If the user agrees to buy

the program, the IRD 30 transmits the purchase agreement mail Econf to the transmitter 10. The transmitter 10 multiplexes the program that the user requested ~~to distribute~~ on the broadcast wave S10 according to the purchase agreement mail Econf and ~~transmitting~~ transmits this.

~~[0055]~~ [0050]   The IRD 30 receives the broadcast wave S10, deciphers the program by means of the cryptanalytic information Key and ~~displaying~~ displays the deciphered program on the monitor 80, and at the same time, controls the VTR 90 according to the control command Cmd to execute the recording of the VOD program.

~~[0056]~~ [0051]   According to the above configuration, since the VOD controller 15 compares the distribution request with each title of the VOD programs stored in the video server 12 to determine the presence of the program corresponding to the distribution request, the user can enter the distribution request in a free style format. ~~;~~ Thus, the user can easily perform a distribution request on the VOD service.

~~[0057]~~ [0052]   Moreover, since the VOD controller 15 transmits the VTR 90 control command Cmd by attaching it to the answer mail Eans and the IRD 30 controls the VTR 90 according to the control command Cmd to execute the recording of the VOD program, the user can easily record the VOD program without operating the VTR 90 ~~separatively~~ separately.

~~[0058]Another Embodiment~~

~~[0059]~~ [0053]   In the aforementioned embodiment, the present invention is applied to a digital ~~satellite~~ broadcasting system using a broadcast satellite. However, the present invention is not ~~only~~ limited to this, but ~~also it~~ may be applied to another broadcasting system, such as ~~a~~ cable television, for example. In this case, the distribution request mail Ereq, the answer mail Eans, the purchase agreement mail Econf and the cancel mail Ecan may be transmitted/received via the cable circuit of a cable television system.

~~[0060]~~ [0054]   While there has been described ~~in connection with the~~ preferred embodiments of the invention, it will be obvious to those skilled in the art that various changes and modifications to these embodiments may be ~~aimed~~made.

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Accordingly, ~~therefore, to cover in~~ the appended claims <u>are</u> <u>intended to cover</u> all such changes and modifications as fall within the true spirit and scope of the invention.

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ABSTRACT OF THE DISCLOSURE

A program distribution system enabling a user to easily buy a program ~~and having improved operability. The program distribution system~~ includes a video server for storing ~~plural~~ a plurality of ~~distributing~~ distributable programs, and a video on demand controller which receives a request for the distribution of a ~~distributing~~ distributable program from an integrated receiver decoder. The~~,~~ distribution request is formed in a free-style text format described in the arbitrary style of the user of the receiver decoder. The controller compares a word described in the distribution request with each title of the ~~distributing~~ distributable programs stored in the video server, and if a title that corresponds to the word ~~distributed~~ described in the distribution request is found, ~~it~~ the controller reads out the corresponding distributing program ~~having that title~~ from the video server and distributes it to the receiver decoder.

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